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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/717,657

11/21/2003

Hiroshi Tsuda

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12/13/2004

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EXAMINER

NGUYEN, TU T

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,657

Applicant(s)

TSUDA, HIROSHI

Examiner

Tu T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>05/13/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2,5-6,8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peupelmann (DE 199 13 800) in view of Johnson et al (6,674,928).

With respect to claims 1,8, Peupelmann discloses an optical fiber strain sensor device 1 (fig 1). The device comprises: an FBG sensor 6 (fig 1) including an optical fiber 7 (fig 1) having an FBG 6 (fig 1) written therein and mounted on an object to be measured (abstract or paragraph 57, the system for monitoring of building or bridges), a broadband light source 3 (fig 1) for directing a broadband light ray to the FBG sensor, and a filter 11 (fig 1) that reflects or transmits a light ray reflected from the FBG sensor, detector 15 or 16 (fig 1).

Peupelmann does not explicitly disclose detecting a strain by detecting a change in a center wavelength of the light ray reflected from the FBG sensor. Johnson discloses a sensing device. The device comprises a sensor for sensing strain by detecting the wavelength shift (column 3, lines 25-30). It would have been obvious to modify Peupelmann with Johnson method to facilitate the sensing.

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With respect to claims 2,9, refer to discussion in claim 1 above for the system. Further, Peupelmann discloses detecting a frequency amplitude transformation (column 4) and a filter 8 (fig 1) that both transmits and reflects a light ray 12-14 (fig 1). Peupelmann does not disclose detecting an amplitude change by inverting the phase of the signal. However, it would have been obvious to modify Peupelmann' system with different method to use the system in different environments.

With respect to claims 5,6, the claimed FBG filter or dielectric multi-layer filter would have been known. It would have been obvious to modify Peupelmann with different type of filters for different using purposes.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peupelmann (DE 199 13 800) in view of Johnson et al (6,674,928) and Bennion et al (6,018,160).

With respect to claim 3, Peupelmann does not disclose an optical circulator. Bennion discloses using an optical circulator 2 (fig 1) for reflecting light. It would have been obvious to modify Peupelmann with Bennion's optical circulator to separate the reflected light more efficient.

With respect to claim 4, it would have been obvious to modify Peupelmann with a plurality of optical circulators to enhance the result.

Allowable Subject Matter

Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior arts of record do not disclose means for detecting includes first and second photoelectric conversion devices for receiving, respectively, light rays reflected from and transmitted through said filter, and signal processing apparatus for inverting the phase of an output of a selected one of said photoelectric conversion devices, combining the inverted and non-inverted outputs, and measuring at least one characteristic of the combined outputs in combination with all the limitations in the base claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu T. Nguyen whose telephone number is (571) 272-2424. The examiner can normally be reached on T-F 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley Jr. can be reached on (571) 272-2800 Ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tu T. Nguyen
Primary Examiner
Art Unit 2877

12/10/2004